

Tense, Aspect, and Bukusu Verb Tones*

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0 Introduction

It has long been known that in many tone languages, especially Bantu languages, tense and aspect play a crucial role in determining the surface tone patterns of verb structures by "imposing" tone patterns which override any other pattern that the verb may already have (for studies on other Bantu languages, see Cassimjee 1995, Downing 1990, McHugh 1990, Odden 1990a, b, c, and others). Therefore, for an account of verbal tones in such languages to be complete, it must recognize this by teasing out any alternations caused by changes in a verb's tense and aspect (henceforth, simply "tense"). Any theory faced with a tense-determined tone system has to deal with the challenge of balancing between what it considers universal and language-specific idiosyncracies as dictated by the individual tenses, as well as the entire verb system. The crucial question is: can the system be explained uniformly using a single set of principles? As I demonstrate in this study, a derivational autosegmental account covers a lot of ground as far as the Bukusu facts go. However, sometimes it resorts to extra stipulations to explain phenomena that do not fall out automatically from its tenets.

Bukusu, which has preserved the Proto-Bantu H(igh)/Low lexical tone contrast in its verbs, displays classic tense-determined tone alternations that divide up into three main categories, which will henceforth be referred to as Classes¹ One, Two, and Three. Despite their differences, these classes share certain basic principles. For instance, each class has some version of a rule that docks the melodic H tone to a specific vowel either in the prefix or stem as required by the tenses involved.

The goal of this study is two-fold: (i) to describe, in sufficient detail, the various tenses potentially available to a Bukusu verb, and the different H tones constituting the input to the system that generates the desired surface tone patterns; and (ii) to provide a derivational account of the tone system of Bukusu verbs. In particular, it will be shown that there are at least three kinds of H tones involved. These include two lexical H tones, which are the stem H and object prefix H tones, a tense-aspect imposed melodic H, and a phrasal H tone inserted between any two adjacent words. These tones spread, delete, and trigger deletion of each other as dictated by principles that we shall determine below.

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¹ I use the term "class" here in the atheoretical sense of a set of things sharing some features, not as a primitive linguistic unit, such as a syntactic or semantic category, or a unified morphemic category.

I have divided up the presentation as follows. Section 1 first provides basic evidence of H(igh)/Low contrast in Bukusu verb stems. Then the focus quickly shifts to motivating the set of Class One tenses, based on certain shared tonal features. Section 2 takes an in-depth look at the infinitive pattern by comparing verbs with different stem lengths both with and without an object prefix. These verbs are also examined in a phrasal context to see the effects that toneless and H toned complements have on a verb's tone. In Section 3, I look at the Class Two pattern, as represented by the Immediate Future tense. Section 4 examines the "Subjunctive Pattern", whereas Section 5 presents three "Residual Cases" which exhibit idiosyncratic patterns that require them to be treated separately. The summary and conclusion are given in Section 6.

1 Background to Bukusu Verbs

Bukusu has maintained the Proto-Bantu H(igh)/Low tone contrast in its verb stems. Thus, the infinitive form of a toneless verb does not bear a H tone in its surface representation (1). A high toned verb, on the other hand, exhibits one H tone on its prefix, and a second one on the stem in case the stem is at least two syllables long, as in (2):

(1) Toneless Verbs

/xu-xu-kalam-a/	[xuukalama]	'to look up'
/xu-xu-saß-a/	[xuusaßa]	'to beg'
/xu-xu-kend-a/	[xuukeenda]	'to walk'

(2) High Toned Verbs

/xu-xu-ßukul-a/	[xúußukúlá]	'to take'
/xu-xu-sam-a/	[xúusamá]	'to bark'
/xu-xu-kaan-i-a/	[xúukaanyá]	'to rebuke/ban'

The non-occurrence of a prefixal H tone in toneless infinitives serves as evidence that the infinitive prefix is underlyingly toneless, which means that the H tone surfacing on the prefix in H toned infinitives originates in the stem. Independent evidence to this effect comes from adding an object prefix to the toneless verbs in (1) to yield the forms in (3):

(3) Toneless Verbs with Object Prefixes

/xu-xu-mu-kalam-a/	[xúumukálámá]	'to look up at him'
/xu-xu-mu-saß-a/	[xúumusáßá]	'to beg her'
/xu-xu-lu-kend-a/	[xúulukééndá]	'to walk it (cl.11)'

Note that the infinitive prefix now bears a H tone, which we assume originates from the object prefix, and "spreads" leftward to the prefix-initial vowel.

Another crucial difference between the forms in (3) and their counterparts in (1) is that in (3), there is a string of H's at the right edge of the verb. Since only one H comes with the object prefix, we assume that the stem final H is a (morphological) property of the infinitive. Later, we will determine why this H fails to surface in toneless verbs lacking an object prefix, e.g. *xuulima* 'to cultivate' and *xuukalama* 'to look up', given that all infinitives have a melodic H.

(4) High Toned Verbs with Object Prefixes

/xu-xu-mu-ßukul-a/	[xúumußukúlá]	'to take him'
/xu-xu-mu-sam-a/	[xúumusamá]	'to bark at him'
/xu-xu-mu-kaan-i-a/	[xúumukaanyá]	'to rebuke/ban him'

A glance at the examples in (4) gives the false impression that H toned verbs are not affected by the addition of an object prefix. The fact, however, is that the H that comes with the object prefix fails to surface, because a H deletion process gets rid of it.

The infinitive shares its tone patterns with four other tenses: the Immediate (today) Future (5), the Intermediate (post-today) Future (6), the Inceptive (7), and the Recent Perfective (8).

(5) The Immediate Future

a. Toneless Verbs

/a-la-kalam-a/	[alakalama]	's/he'll look up'
/a-la-saß-a/	[alasaßa]	's/he'll beg'
/a-la-kend-a/	[alakeenda]	's/he'll walk'

b. H Toned Verbs

/a-la-ßukul-a/	[aláßukúlá]	's/he'll take'
/a-la-sam-a/	[alásamá]	's/he'll bark'
/a-la-kaan-i-a/	[alákaanyá]	's/he'll rebuke/ban'

(6) The Intermediate Future

a. Toneless Verbs

/a-xa-kalam-e/	[axakalame]	's/he'll look up'
/a-xa-saß-e/	[axasaße]	's/he'll beg'
/a-xa-kend-e/	[axakeende]	's/he'll walk'

b. H Toned Verbs

/a-xa-ßukul-e/	[axáßukúlé]	's/he'll take'
/a-xa-sam-e/	[axásamé]	's/he'll bark'
/a-xa-kaan-i-e/	[axákaanyé]	's/he'll rebuke/ban'

(7) The Inceptive

a. Toneless Verbs

/a-a-kalam-a/	[aakalama]	'there s/he looks up'
/a-a-saß-a/	[aasaßa]	'there s/he begs'
/a-a-kend-a/	[aakeenda]	'there s/he walks'

b. H Toned Verbs

/a-a-ßukul-a/	[ááßukúlá]	'there s/he takes'
/a-a-sam-a/	[áásamá]	'there s/he barks'
/a-a-kaan-i-a/	[áákaanyá]	'there s/he rebukes/bans'

(8) The Recent Perfective

a. Toneless Verbs

/a-a-kalam-il-e/	[aakalaame]	's/he has looked up'
/a-a-saß-il-e/	[aasaßile]	's/he has begged'
/a-a-kend-il-e/	[aakeendile]	's/he has walked'

b. H Toned Verbs

/a-a-ßukul-il-e/	[ááßukúúlé]	's/he has taken'
/a-a-sam-il-e/	[áásamílé]	's/he has barked'
/a-a-kaan-i-il-e/	[áákaaníísyé]	's/he has rebuked/banned'

The common factor in the patterns in (5) - (8) is that tone assignment is sensitive to two other factors besides tense: (a) the underlying tone of the verb, and (b) the presence or

absence in the verb of an object prefix. Thus, toneless verbs that have no object prefix bear no H tone, whereas H toned verbs exhibit two H tones: one in the prefix structure, and another at the right edge of the stem. We will henceforth refer to these tones as the Class One tones, including the infinitive. In the next section we examine the Infinitive in more detail to determine how the Class One pattern is derived.

2 The Class One Tenses

A toneless monosyllabic infinitive bears a H tone that docks to the prefix, as in (9a) below, while the stem surfaces without a H tone. Longer verbs, on the other hand, are toneless both in the prefix domain and in the stem, as in (9b,c).

(9) Toneless Verbs

a. Monosyllabic Stems

/xu-xu-se-a/	[xúusya]	'to grind'
/xu-xu-ku-a/	[xúukwa]	'to fall'

b. Disyllabic Stems

/xu-xu-lim-a/	[xuulima]	'to cultivate'
/xu-xu-tuum-a/	[xuutuumá]	'to skip'

c. Polysyllabic Stems

/xu-xu-kalam-a/	[xuukalama]	'to look up'
/xu-xu-lolelel-a/	[xuulolelela]	'to stare at'

H toned monosyllabic verbs exhibit a tone pattern identical to that of monosyllabic toneless verbs, as in (10a). However, longer H toned verbs exhibit two H tones in their structure, the first of which docks in the prefix domain while the second attaches to the stem, as in (10b,c):

(10) H Toned Verbs

a. Monosyllabic Stems

/xu-xu-ku-a/	[xúukwa]	'to fall'
/xu-xu-li-a/	[xúulya]	'to eat'

b. Disyllabic Stems

/xu-xu-βon-a/	[xúuβoná]	'to see'
/xu-xu-teex-a/	[xúuteexá]	'to cook'

c. Polysyllabic Stems

/xu-xu-βukul-a/	[xúuβukúlá]	'to take'
/xu-xu-xalak-il-a/	[xúuxalákílá]	'to cut for'

In general, toneless and H toned infinitives have very different surface tone patterns, despite the neutralization of high/low tone contrast in monosyllabic verbs.

Two simple tests can be used to tell the underlying tone pattern of a monosyllabic verb. First, when lengthened via suffixation, an underlyingly toneless monosyllabic verb surfaces without a H tone. For instance, addition of the applied suffix to *xúusya* 'to grind' creates toneless *xuusyeela* 'to grind for.' In contrast, a high-toned monosyllabic verb not only retains its prefix H when lengthened by suffixation, but exhibits a stem H that falls on the second and subsequent syllables of the derived stem, in which case *xúulya* 'to eat' becomes *xúuliilá* 'to eat for,' *xúuliiláná* 'to eat for each other,' and so forth.

The second test involves adding an object prefix to the applied forms of monosyllabic verbs. In the resultant structures, the stem H docks to the stem initial syllable in case the verb is underlyingly toneless, but only to syllable two in a H toned verb. Thus, toneless *xuusyela* 'to grind for' becomes *xuumusyélá* 'to grind for her' with H on the stem-initial syllable, whereas H toned *xúuliilá* 'to eat for' goes to *xúumuliilá* 'to eat for her' with H on the second stem syllable.

The tonelessness of monosyllabic verbs after suffixation makes their being H toned in basic forms peculiar. However, this might reflect a "minimality" condition requiring every stem to have a certain minimum size. (Monosyllabic verbs behave similarly in SeTswana, a Southern Bantu language, so the Bukusu case is not an isolated case.²) Stems that fail to meet this requirement compensate by making their only stem syllable prominent - i.e. by assigning it a H tone.

2.1 Deriving the Class One Pattern

First, consider the appearance of the lexical stem H onto the prefix. In a classical autosegmental analysis this can be derived by spreading the H from its underlying locus to its surface position. Two successive processes get the lexical H from its sponsor in the stem to the prefix: Leftward Spreading (11) and Right Sister Delinking (12).

(11) Leftward Spreading (Iterative R to L)³



(12) Right Sister Delinking



Leftward Spreading (11) is there to ensure that underlying H's "spread" to vowels earlier in the word that do not already have a H tone. Right Sister Delinking (12), on the other hand, delinks all the association lines except the one linking it to the prefix. This way the system derives the desired singly linked H tone instead of a string.

Whereas Leftward Spreading (11) is a general process that applies to any H tone, as independently shown by the multiply-linked stem H in *xúufukúlá* 'to take,' Right Sister Delinking (12) only applies to a H tone whose leftmost branch is attached to a prefix vowel. This two-rule account is a derivative of an assumption in the theory that tones "spread" iteratively from one potential anchor to another till they reach their target.

After an object prefix has been added to a toneless verb, a H tone surfaces in the stem. This shows two things: (i) that there is a melodic H tone associated with the Class One tenses, and (ii) that the surfacing of the melodic H is dependent on the presence of the H on the prefix. That would explain the drastic change from toneless *xuukalama* 'to look up' to *xúumukálámá* 'to look up at him.'

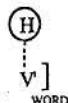
To determine how the surface patterns are derived, let us assume, without going into specific reasons why, that the melodic H first docks to the final vowel, as in (13) below, and then undergoes Leftward Spreading (11). Because the lexical stem H is docked to the stem-initial syllable in H toned verbs, the melodic H can only spread as far left as the

² David Odden (personal communication).

³ V' designates a toneless vowel.

second stem syllable. H toned verbs do not have a lexical stem H tone, so the melodic H will spread all the way to the initial syllable.

(13) Melodic H Docking⁴



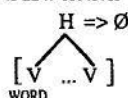
The leftward spreading of the melodic H in a toneless verb yields a structure with a multiply-linked single H tone, as in the representation of *xuukalama* 'to look up' in (14):

(14) Multiply Linked H



Since the language has no verbs with the pattern in (14), it is feasible that a subsequent rule, formulated as (15), deletes the H tone because it is linked to both ends of the verb.⁵

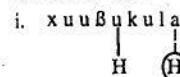
(15) Final H Deletion



Final H Deletion (15) does not apply to H toned verbs because the melodic H never spreads all the way to the initial syllable in such verbs.

(16) Derivations

a. H Toned Verb



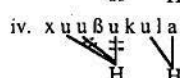
MHD



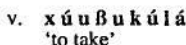
LS



FHD

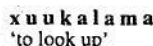
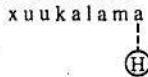


RSD



SURFACE

b. Toneless Verb



⁴ The circle around H designates "floating tone."

⁵ The reason for being category-specific is that in phrases nouns and adjectives exhibit strings of H's that span the entire word (cf. *baḡaandu* 'people', but *baḡaándú, baakali* 'many people').

The derivations in (16) show how the patterns of verbs without an object prefix are reached. After docking to the final syllable, the melodic H undergoes Leftward Spreading (LS), spreading either till it hits the initial syllable or it is blocked by a lexical stem H. In toneless verbs, the pattern created by the spreading has the right conditions for Final H Deletion (FHD), which deletes the melodic H altogether. In a H toned verb, the lexical stem H spreads to the prefix. Final H Deletion cannot happen in H toned verbs because the melodic H never spreads to the initial syllable. To create the correct surface patterns, Final H Deletion and Right Sister Delinking (RSD) are crucially ordered after Leftward Spreading but they are not ordered with respect to each other.

The derivations in (16) apply as much to monosyllabic and disyllabic verbs as they do to longer verbs, except that in toneless monosyllabic verbs a H tone is assigned very early to ensure that the only stem syllable is prominent, given that the stem is shorter than the required minimal length. Once the H has been assigned, the surface pattern of a toneless monosyllabic verb undergoes the same derivational process as its H toned counterpart.

Now consider what happens when an object prefix is added to the forms in (9) and (10). The corresponding forms are given in (17) and (18), respectively:

(17) **Toneless Verbs with Object Prefix**

a. Monosyllabic Stems

/xu-xu-mu-se-a/	[xúumusya]	'to grind him/her'
/xu-xu-ku-ku-a/	[xúukukwa]	'to fall it (cl.3)'

b. Disyllabic Stems

/xu-xu-ku-lim-a/	[xúukulímá]	'to cultivate it (cl.3)'
/xu-xu-ku-tuum-a/	[xúukutúúmá]	'to skip it (cl.3)'

c. Polysyllabic Stems

/xu-xu-mu-kalam-a/	[xúumukálámá]	'to look up at him/her'
/xu-xu-mu-lolelel-a/	[xúumulóléélélá]	'to stare at him/her'

(18) **H Toned Verbs with Object Prefix**

a. Monosyllabic Stems

/xu-xu-mu-ri-a/	[xúumurya]	'to fear him/her'
/xu-xu-βu-li-a/	[xúuβulya]	'to eat it (cl.14)'

b. Disyllabic Stems

/xu-xu-mu-βon-a/	[xúumuβoná]	'to see him/her'
/xu-xu-ki-teex-a/	[xúukiteexá]	'to cook it (cl.10)'

c. Polysyllabic Stems

/xu-xu-ka-βukul-a/	[xúukaβukúlá]	'to take them (cl.6)'
/xu-xu-si-xalak-il-a/	[xúusixalákílá]	'to cut it (cl.7) for'

Not only does the change in toneless verbs (17) from being toneless to having two H tones after object prefix addition confirm that all infinitives receive a melodic H, but also shows that object prefixes are H toned. The H tone that comes with the object prefix spreads onto the infinitive prefix whereas the melodic H docks within the stem. Therefore the patterns in (17) can be derived with the rules in the derivations in (16).

Although the rules postulated to explain the Class One pattern predict the correct output for toneless verbs (19b), they will yield the wrong output for a H toned verb (19a). Thus, instead of *xúumuβukúlá* 'to take him,' the system predicts **xúumuβúkúlá*, which

has the H that comes with the object prefix spreading to the prefix but the lexical stem H remains undeleted:

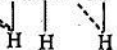
(19) Derivations

a. H Toned Verb

i. x u u m u β u k u l a MHD

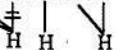


ii. x u u m u β u k u l a LS



iii. _____ FHD

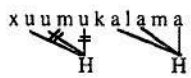
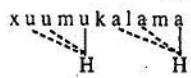
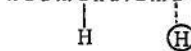
iv. x u u m u β u k u l a RSD



v. *x ú u m u β ú k ú l á SURFACE
'to take him/her'

b. Toneless Verb

x u u m u k a l a m a



x ú m u k á l á m á
'to look up at him/her'

What is needed is Reverse Meeussen's Rule (20) to delete the stem-initial H, and in so doing remove an OCP violation created by spreading the melodic H tone:

(20) Reverse Meeussen's Rule⁶



An alternative account might assume that the stem-initial H and the H on the object prefix undergo High Fusion (21) before spreading to the prefix. Then Right Sister Delinking erases all but the leftmost association line of the derived multiply-linked H:

(21) High Fusion



The derivation in (22) below captures the scenario adequately. Although Reverse Meeussen's Rule and High Fusion yield the same results they make different predictions concerning the deletion of adjacent H tones. Crucially, whereas High Fusion is ordered before Leftward Spreading, Reverse Meeussen's Rule is ordered after the spreading. This predicts that there are no structures in the language where the first of two adjacent H's fails to delete, whether the adjacency is underlying or derived. Although such a pattern is unattested in the Class One tenses, the language has forms like *damúkálámá* 's/he already looked up at him' whose string of H's must have resulted from the object prefix H combining with the Melodic H tone. High Fusion, on the other hand, only affects H tones that are adjacent underlyingly, in which case it allows for a spreading H tone to end up on a syllable that is adjacent to the one bearing a lexical H tone. Nothing of importance hinges on whether we prefer Reverse Meeussen's Rule over H Fusion of vice versa.

⁶ As I show later, Meeussen's Rule applies between the object prefix H and the stem initial H, but Reverse Meeussen's Rule deletes a stem H that is adjacent to a melodic H to its right. This raises the curious question why "Inserted" tones tend to delete later than lexical H tones, and whether this is a language-specific or cross-linguistic feature.

(22) Deriving the H Toned + Object Prefix Pattern

- i. xuumuβukula... MHD
- ii. xuumuβukula High Fusion
- iii. xuumuβukula LS
- iv. xuumuβukula RSD
- v. xúumuβukúlá 'to take him' SURFACE

If indeed both the object prefix H and the melodic H are retained in *áamúkálámá*, it is possible that this is a tense-imposed property that does not necessarily derive via successive application of the set of rules motivated so far.

In summary, the following rules, and crucial orderings, create the Class One pattern:

(23) Rules

- i. Melodic H Docking
- ii. High Fusion
- iii. Leftward Spreading
- iv. Reverse Meeussen's Rule
- v. Final H Delinking
- vi. Right Sister Delinking

Before concluding this section, let us briefly return to the spreading of lexical stem H to the prefix domain. Recall that in infinitive structures, the lexical stem H spreads to the infinitive prefix (i.e. the leftmost syllable). This targeting of the initial syllable does not happen in Class One tenses when a subject prefix is present, as shown by the following forms from the Immediate Future:

(24) Toneless Verbs

a. Monosyllabic Stems

/a-la-se-a/	[alásya]	's/he'll grind'
/a-la-ku-a/	[alákwa]	's/he'll fall'

b. Disyllabic Stems

/a-la-lim-a/	[alalima]	's/he'll cultivate'
/a-la-tuum-a/	[alatuum]	's/he'll skip'

c. Polysyllabic Stems

/a-la-kalam-a/	[alakalama]	's/he'll look up'
/a-la-loleelel-a/	[alaloleelela]	's/he'll stare'

(25) H Toned Verbs

a. Monosyllabic Stems

/a-la-ri-a/	[alárya]	's/he'll fear'
/a-la-li-a]	[alálya]	's/he'll eat'

b. Disyllabic Stems

/a-la-βon-a/	[aláβoná]	's/he'll see'
/a-la-teex-a/	[aláteexá]	's/he'll cook'

c. Polysyllabic Stems

/a-la-βukul-a/	[aláβukúlá]	's/he'll take (cl.6)'
/a-la-xalak-il-a/	[aláxalákílá]	's/he'll cut for'

Apparently, the subject prefix falls outside the domain of Leftward Spreading.

Because H never docks to the subject prefix in a form like *alakalama* 's/he'll look up,' we must modify the domain of Final H Deletion (FHD) to avoid generating unattested **alákálámá*, because as stated in (15), FHD can only delete a H tone that simultaneously links to the initial and final syllables. However, the facts in (25) require that the domain of Final H Deletion be defined so as to include the infinitive and tense prefixes but exclude the subject prefix. Since such a structure is neither a stem nor a word, I arbitrarily assign the name G to the domain of both Leftward Spreading and Final H Deletion. This calls for a replacement of "WORD" in the statement (15) with "G."

Having determined that the subject prefix falls outside the domain of Leftward Spreading, now consider the Inceptive forms in (26) and (27):

(26) Toneless Verbs

a. Monosyllabic Stems

/a-a-se-a/	[áásya]	's/he'll grind'
/a-a-ku-a/	[áákwa]	's/he'll fall'

b. Disyllabic Stems

/a-a-lim-a/	[aalima]	'there s/he cultivates'
/a-a-tuum-a/	[aatuuma]	'there s/he skips'

c. Polysyllabic Stems

/a-a-kalam-a/	[aakalama]	'there she looks up'
/a-a-lolelelel-a/	[aalolelelela]	'there s/he stares'

(27) H Toned Verbs

a. Monosyllabic Stems

/a-a-ri-a/	[áárya]	'there s/he fears'
/a-a-li-a]	[áálya]	'there s/he eats'

b. Disyllabic Stems

/a-a-βon-a/	[ááβoná]	'there s/he sees'
/a-a-teex-a/	[ááteexá]	'there s/he cooks'

c. Polysyllabic Stems

/a-a-βukul-a/	[ááβukúlá]	'there s/he takes (cl.6)'
/a-a-xalak-il-a/	[ááxalákílá]	'there s/he cuts for'

The H tone on the initial syllable in H toned verbs (27) makes it seem like the subject prefix was targeted by the spreading lexical stem H tone, and in turn gives these data the appearance of counter-evidence to the notion that the subject prefix is outside the domain of H spreading.

However, notice that there is a structural difference between the prefixes marking the Immediate Future and the Inceptive: i.e. the former is a full CV syllable whereas the latter only consists of a vowel. When the 3 sg. subject prefix and the Inceptive tense marker are juxtaposed, the subject prefix deletes by a general process which eliminates a non-high vowel that precedes another vowel. Subsequent compensatory lengthening reassociates the derived "floating" mora to the surviving vowel. Because the H tone in question is associated with this second vowel, it is possible that the derived long syllable has a rising tone that a phonetic implementation rule turns into a level H. After all, the language does not contrast level H and rising tones word-initially.

2.2 Class One Tenses in Phrases

There are structural restrictions to remember as we examine verbs in phrases. First, a Bukusu verb can have a verb-internal marking of an object by showing in its structure an object prefix that refers to the object in question. Alternatively, the verb can be followed by an overt object NP, which rules out the possibility of the verb cannot containing the prefix referring to the object. Therefore, the verb *xúulya* 'to eat,' can take the object prefix *fu* to become *xúufúlyá* 'to eat it (cl.14),' or be followed by a nominal complement, as in *xúulyá fúusuma* 'to eat porridge,' but not **xúufúlyá fúusuma* (= 'to eat porridge'). An adverbial complement such as *fwaangu* 'quickly,' *lúukali* 'much,' *luundi* 'again', and so forth influences the verb's tone the same way a noun does.

Also to remember is the fact that a Bukusu verb can have only one object prefix in its structure at a time. As a consequence, a ditransitive verb like *xúuwa* "to give" can only contain an indirect object prefix in its structure; the direct object has to occur as a separate word. Therefore, we find *xúumuwa kamalesi* 'to give him medicines,' but never **xúumukawa* or **xúukamuwa* meaning 'to give them to him.'

Because of the first restriction, we will use postverbal complements that are not noun phrases if and when they become necessary. Although this removes consistency, given that a verb takes a nominal complement when it has no object prefix and an adverbial complement after an object prefix has been added, it does not affect the basic fact that the tone mapping rules in the two types of phrases are the same regardless of the syntactic function of the postverbal complement. The second restriction does not bear directly on our study, so we will ignore it for now.

(28) Toneless Verbs with Toneless Object

a. Monosyllabic Verbs

<i>xúusya</i> Buufu	'to grind flour'
<i>xúukwa</i> kumupixa	'to fall a fall' ⁷

b. Disyllabic Verbs

<i>xúulima</i> kumukuunda	'to cultivate a farm'
<i>xúutuuma</i> kumukoye	'to skip a rope'

c. Polysyllabic Verbs

<i>xúuloleelela</i> mwiikulu	'to stare at the sky'
------------------------------	-----------------------

⁷ Most verbs designated as intransitive in English take an "object" in Bukusu that refers to the action or state denoted by the verb. Thus a person sleeps sleep, walks a walk, dies a death, etc. To that extent, we treat them as transitive.

When followed by a noun of any tone, a toneless verb will exhibit a H tone on the infinitive prefix. Note that in (28), a toneless noun causes a H tone to appear on the prefix of a preceding toneless verb. The same pattern is repeated before H toned complements for verbs whose stems are at least two syllables long. Clearly, a phrasal H tone gets assigned to a verb before a complement. This phrasal H docks as far left in the verb as possible, which in toneless verbs is the initial syllable (in infinitives).

(29) Toneless Verbs with H Toned Object

a. Monosyllabic Verbs

xúusyá Búulo	'to grind millet'
xúukwá kámalalu	'to become mad' ⁸

b. Disyllabic Verbs

xúulima Búulime	'to cultivate land'
xúutuuma kámawa	'to skip (over) thorns'

c. Polysyllabic Verbs

xúukaláma Báaloosi	'to look up at old women'
xúuloleelela múungaaki	'to stare up(ward)'

Disyllabic and polysyllabic verbs keep the same tone pattern when followed by a H toned word (29b,c), but monosyllabic verbs surface with a H tone on the stem vowel (29a) in addition to the H in the prefix. Because this makes monosyllabic verbs similar to H toned verbs, they must be treated as H toned verbs, whose patterns we now examine.

(30) H Toned Verbs with Toneless Object

a. Monosyllabic Verbs

xúulya Buufu	'to eat flour'
xúurya ċitalaŋi	'to fear lions'

b. Disyllabic Verbs

xúuBona Baalosi	'to see witches'
xúuteexa kamalesi	'to cook medicines'

c. Polysyllabic Verbs

xúuBukúla Baalosi	'to take witches'
xúuxalákila BaBaandu	'to cut for (also: <i>judge</i>) people'

(31) H Toned Verbs with H Toned Object

a. Monosyllabic Verbs

xúulyá Búusuma	'to eat porridge'
xúuryá kámaxala	'to fear crabs'

b. Disyllabic Verbs

xúuBoná Báalosi	'to see women'
xúuteexá kámátóore	'to cook plantains'

c. Polysyllabic Verbs

xúuBukúla Báaloosi	'to take old women'
xúuxalákila Báaxaana	'to cut for (also: <i>judge</i>) girls'

⁸ Literally 'to fall madness,' but with the logical reading 'for madness to befall...'

Because the melodic H always docks to the second stem syllable in H toned verbs, it will surface when the verb is followed by a complement that is either toneless or H toned if the stem is longer than two syllables. However, the melodic H always deletes in a monosyllabic or disyllabic verb whenever the complement is toneless, because in such a verb the H is always word-final, in which case it always falls adjacent to a toneless word. This explains why H surfaces without an problem in the following extended forms of the verbs in question:

(32) Extended H Toned Verbs with Object NP

a. Monosyllabic Verbs

xúuliila BaBaandu	'to eat for people'
xúuliilána Buufu	'to eat flour for e.o.'
xúuliilána Búusuma	'to eat porridge for e.o.'

b. Disyllabic Verbs

xúuBonéla BaBaandu	'to see for people'
xúuBonélaana Baalosi	'to see witches for e.o.'
xúuBonélaana Báaloosi	'to see old women for e.o.'

The melodic H tone targets the second stem syllable in H toned verbs, which is expected given that the stem-initial syllable in such verbs is the lexical stem H sponsor. Because a monosyllabic verb has only one stem syllable, the melodic H is forced to dock to the stem-initial syllable despite its being the sponsor of lexical stem H. Disyllabic and polysyllabic verbs are long enough for the melodic H to find the appropriate anchor. But a disyllabic stem is not long enough to protect the H from undergoing pre-toneless word deletion (33), a very general process that applies between any two words that do not necessarily constitute a syntactic or semantic category.

(33) Deletion of H before a Toneless Complement

Delete a word-final H tone in case the next word is toneless.

In sum then, a verb selecting a Class One tense will exhibit the following features in isolation: (i) it surfaces as toneless if it is underlyingly toneless, and exhibits two H tones if it is underlyingly H toned; and (ii) the addition of an object prefix causes a toneless verb to acquire the tone pattern of a H toned verb, whereas a H toned verb retains its pattern. If we consider Meeussen's and Reverse Meeussen's as flip sides of the same rule, and High Fusion as an alternative to either of them, a total of five rules are needed to explain the Class One tone pattern. These include: (1) Melodic H Docking, (2) Leftward Spreading, (3) Meeussen's/Reverse Meeussen's Rule, (4) Right Sister Delinking, and (5) Final H Deletion. At phrase level, the string of H's appearing at the right edge of a verb delinks, and is replaced with a H that singly links to the stem-initial syllable if the verb is underlyingly toneless, and to the second stem syllable in an underlyingly H toned verb. A H docked to the verb's final syllable will delete in case the next word is toneless. As we now turn to other tone Classes, it is relevant to ask which of these rules apply there as well. The answer will become evident as the facts unfold.

3 The Class Two Tenses

The Class Two pattern appears in the Intermediate Past, Remote Future, Simple Present, and the Progressive. For an overview of the tone features shared by these tenses, let us begin with a look at data from the Intermediate Past. Perhaps the most notable thing about these examples is that in the Class Two pattern all verbs bear a H tone in their surface representation regardless of their underlying tone. Recall that toneless verbs surfaced as toneless in the Class One pattern.

(34) Toneless Verbs

a. Monosyllabic Stems

/a-a-se-il-e/	[aasyéele]	's/he ground'
/a-a-ku-il-e/	[aakwiile]	's/he fell'

b. Disyllabic Stems

/a-a-lim-il-e/	[aalímile]	's/he cultivated'
/a-a-tuum-il-e/	[aatúumile]	's/he skipped'

c. Polysyllabic Stems

/a-a-kalam-il-e/	[aakálaame] ⁹	's/he looked up'
/a-a-loleel-il-e/	[aalóleelele]	's/he stared'

(35) H Toned Verbs

a. Monosyllabic Stems

/a-a-li-il-e/	[aaliíle]	's/he ate'
/a-a-ri-il-e/	[aariíre]	's/he feared'

b. Disyllabic Stems

/a-a-βon-il-e/	[aaβoóne]	's/he saw'
/a-teex-il-e/	[aateexile]	's/he cooked'

c. Polysyllabic Stems

/a-a-βukul-il-e/	[aaβukúule]	's/he took'
/a-a-xalak-il-il-e/	[aaxalákiile]	's/he judged'

Also significant about the Intermediate Past pattern is that rather than surface as a string of H's, the melodic H docks to a single syllable. It docks to the stem-initial syllable in an underlyingly toneless verb, surfacing as a falling tone if the targeted syllable is long. In contrast, it docks to the second stem syllable in a H toned verb, but only if the verb is longer than two syllables. Apparently, the H tone looks for and finds the stem-initial syllable in toneless verbs but not in H toned verbs because of the lexical stem H. As an alternative to the stem-initial syllable, the H docks to the second syllable, the leftmost toneless stem syllable available.¹⁰ The melodic H fails to surface if the verb stem is shorter than three syllables. But in a disyllabic verb that has a long stem-initial syllable, the melodic H surfaces on the second mora of the long syllable, as seen in *aaliíle* 's/he ate' (35a) and *aaβoóne* 's/he saw' (35b). This shows that in the Class Two tenses docking of the melodic H in the stem pays attention to the position of the target syllable. Specifically, the H avoids the second stem syllable that is also word final. That would explain why the applied (perfective) forms in (36) do not have a rising tone on the penult, as their second syllable is non-final.

(36) Applied Intermediate Past

/a-a-li-il-il-e/	[aaliilíle]	's/he ate for/with'
/a-a-βon-il-il-e/	[aaβonéele]	's/he saw for/with'

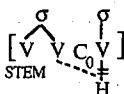
In summary, a Class two tense requires that each verb surface with melodic H tone regardless of the verb's underlying tone. Secondly, the lexical stem H tone cannot spread to the subject or tense prefixes. Thirdly, these tenses impose a one-H-per-stem restriction that causes deletion of the lexical stem H once the melodic H has docked. We have noted further that these tenses prohibit word-final H tones. Consequently, in a disyllabic H

⁹ The penult syllable lengthens compensatorily following imbrication of the perfective suffix -il-.

¹⁰ This targeting of V2 by H is also found in Runyankore, a Bantu language of Uganda (Poletto, this volume).

toned stem, the H tone will retract to the second mora of the stem-initial syllable in case that syllable is long (34a). But retraction will not apply if the stem-initial syllable is short. Thus, the Remote Future form *aliβona* 's/he'll see' is toneless, but when the applied suffix is added, a H appears on the second stem syllable (cf. *aliβonéla* 's/he'll see for'). Final H Retraction can be formalized as follows:

(37) Final H Retraction



Now consider what happens when an object prefix is added to toneless verbs in the Class Two tenses. Once again, the examples are from the Intermediate Past:

(38) Toneless Verbs

a. Monosyllabic Stems

/a-a-mu-se-il-e/	[aamúsyeele]	's/he ground him'
/a-a-ku-ku-il-e/	[aakúkwiile]	's/he fell it (cl.3)'

b. Disyllabic Stems

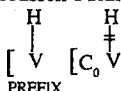
/a-a-βu-lim-il-e/	[aaβúlimile]	's/he cultivated it (cl.14)'
/a-a-ku-tuum-il-e/	[aakútuumile]	's/he skipped it (cl.3)'

c. Polysyllabic Stems

/a-a-mu-kalam-il-e/	[aamúkalaame]	's/he looked up at him'
/a-a-mu-lolelel-il-e/	[aamúloleleele]	's/he stared at him'

In the forms in (38), a high tone invariably surfaces on the object prefix. Since the object prefix is high toned, and because H tones generally do not "spread" to a syllable that already functions as a H tone anchor, we assume that when the melodic H tone docks to the stem initial syllable in a verb selecting the Class Two pattern, it ends up being (syllable) adjacent to the H on the object prefix. The resultant structure needs Meeussen's Rule (39) to eliminate the stem-initial H in order to remove the derived OCP violation. Meeussen's Rule must be constrained to only target a stem H tone that follows a H tone docked to a prefix. This will ensure that it does not apply between adjacent H tones within the stem, which is the domain of Reverse Meeussen's Rule. This correctly predicts that Class Two does not show strings of H's extending from the object prefix to the stem.

(39) Meeussen's Rule



A H toned verb will exhibit the patterns in (40) below when an object prefix is added. Addition of an object prefix to a verb with a retracted stem H tone (40a,b) causes a bridge effect between the H tone on the object prefix and the retracted melodic H tone. This particular docking only happens in the Class Two tenses, and is what most distinguishes Class Two from the Class One pattern.¹¹

¹¹ Poletto (1994) reports a similar bridging effect in OluSamia, also a Bantu language of Kenya.

(40) H Toned Verbs with Object Prefix**a. Monosyllabic Stems**

/a-a-βu-li-il-e/	[aaβúliíle]	's/he ate it (cl.14)'
/a-a-mu-ri-il-e/	[aamúrííre]	's/he feared him'

b. Disyllabic Stems

/a-a-mu-βon-il-e/	[aamúβóóne]	's/he saw him'
/a-a-ka-teex-il-e/	[aakáteexíle]	's/he cooked them (cl.6)'

c. Polysyllabic Stems

/a-a-mu-βukul-il-e/	[aamúβukúúle]	's/he took him'
/a-a-βa-xalak-il-il-e/	[aaβáxalákiile]	's/he judged (cut for) them'

I propose that the bridge effect is caused by a late phonetic implementation process which applies when a prefixal H is followed by a rising contour created by melodic H retraction. This only happens when the syllable bearing the melodic H is long and the H falls on the second of its moras, because it does not apply in a form like *alimwáaβúúla* 's/he'll split for him' even though the object prefix H is also adjacent to the melodic H.

Let us now examine data from the other tenses exhibiting the Class Two pattern.

(41) The Remote Future**a. Toneless Verbs**

/a-li-kalam-a/	[alikálama]	's/he'll look up'
/a-li-lim-a/	[alilíma]	's/he'll cultivate'
/a-li-tuum-a/	[alitúuma]	's/he'll skip'

b. H Toned Verbs

/a-li-βukul-a/	[aliβukúla]	's/he'll take'
/a-li-sam-a/	[alisama]	's/he'll bark'
/a-li-teex-a/	[aliteéxa]	's/he'll cook'

(42) The Simple Present**a. Toneless Verbs**

/a-kalam-a/	[akálama]	's/he looks up'
/a-lim-a/	[alíma]	's/he cultivates'
/a-tuum-a/	[atúuma]	's/he skips'

b. H Toned Verbs

/a-βukul-a/	[aβukúla]	's/he takes'
/a-sam-a/	[asama]	's/he barks'
/a-teex-a/	[ateéxa]	's/he cooks'

(43) The Present Progressive**a. Toneless Verbs**

/a-líxó a-kalam-a/	[alíxáakálama]	's/he's looking up'
/a-líxó a-lim-a/	[alíxáalíma]	's/he's cultivating'
/a-líxó a-tuum-a/	[alíxáatúuma]	's/he's skipping'

b. H Toned Verbs

/a-líxó a-βukul-a/	[alíxáaβukúla]	's/he's taking'
/a-líxó a-sam-a/	[alíxáasama]	's/he's barking'
/a-líxó a-teex-a/	[alíxáateéxa]	's/he's cooking'

Notice that, just like in the Intermediate Future forms given above, all verbs have a surface H tone that singly links to the stem-initial syllable in toneless verbs and to the second stem syllable in H toned verbs. Another shared feature is final H retraction (or deletion where appropriate) in disyllabic H toned verbs (cf. *aliteéxa* and *alisama* (41b), *ateéxa* and *asama* (42b), etc.).

When an object prefix is added to a verb selecting any of these tenses, the object prefix displays a H, but the adjacent stem-initial syllable is toneless. In fact, a toneless verb has no H tone in the entire stem, indicating that Meeussen's Rule kicks in to eliminate the OCP violation resulting from juxtaposition of the object prefix H and the melodic H.

(44) The Remote Future

a. Toneless Verbs

/a-li-mu-kalam-a/	[alimúkalama]	's/he'll look up him'
/a-li-mu-lim-a/	[alikúlíma]	's/he'll cultivate it (cl.3)'
/a-li-mu-tuum-a/	[alimútuuma]	's/he'll skip him'

b. H Toned Verbs

/a-li-mu-βukul-a/	[alimúβukúla]	's/he'll take him'
/a-li-mu-sam-a/	[alimúsama]	's/he'll bark at him'
/a-li-mu-teex-a/	[alimutééxa]	's/he'll cook him'

(45) The Simple Present

a. Toneless Verbs

/a-mu-kalam-a/	[amúkalama]	's/he looks up at him'
/a-mu-lim-a/	[akúlíma]	's/he cultivates it (cl.3)'
/a-mu-tuum-a/	[amútuuma]	's/he skips him'

b. H Toned Verbs

/a-mu-βukul-a/	[amúβukúla]	's/he takes him'
/a-mu-sam-a/	[amúsama]	's/he barks at him'
/a-mu-teex-a/	[amutééxa]	's/he cooks him'

(46) The Present Progressive

a. Toneless Verbs

/a-líxó a-mu-kalam-a/	[alíxáamúkalama]	's/he's looking up at him'
/a-líxó a-mu-lim-a/	[alíxáakúlíma]	's/he's cultivating it (cl.3)'
/a-líxó a-mu-tuum-a/	[alíxáakútuuma]	's/he's skipping it (cl.3)'

b. H Toned Verbs

/a-líxó a-mu-βukul-a/	[alíxáamúβukúla]	's/he's taking him'
/a-líxó a-mu-sam-a/	[alíxáamúsama]	's/he's barking at him'
/a-líxó a-mu-teex-a/	[alíxáamutééxa]	's/he's cooking him'

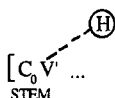
To recapitulate, a verb bearing a Class Two tense must have at least one surface H tone, except H toned verbs with stems that have two or fewer syllables. The Class Two pattern is created by the melodic H directly targeting the left edge of the stem, and docks to the stem-initial syllable in toneless verbs, and the second syllable in a H toned verb. The subject and tense prefixes are not eligible anchors. This forces the lexical stem H to remain on the stem-initial syllable until it is deleted in accordance with the requirement that each stem have only one H tone. A stem H tone falling on the final syllable either retracts if the stem-initial syllable is long, or deletes to avoid violating the prohibition

against word-final H's. Finally, an object prefix keeps its H in the absence of an eligible anchor to its left, and as a result Meeussen's Rule deletes the melodic H docked on the stem-initial syllable of a toneless verb.

3.1 Deriving the Class Two Pattern

The Class Two pattern shares with the Class One pattern the property of having two domains that are targeted by Leftward Spreading (11): the prefix domain for the lexical stem H tone, and the stem for the melodic H tone. The Class Two pattern does not allow H to surface either on the subject or tense prefixes, making this pattern both similar to, and different from, the Class One pattern: similar because the subject prefix is ineligible, but different because the tense prefix is also excluded. Since there is no evidence that the melodic H tone ever docks on the final syllable in the Class Two pattern, we revise Melodic H Docking (13) as follows:

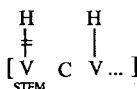
(47) Melodic H Docking - II



Once the melodic H tone has docked in a verb selecting the Class Two pattern, any lexical stem H that cannot spread to the prefix structure gets deleted. The deletion is an effect of a restriction that allows only one surface H tone in the stem.

The surface tone of toneless verbs is derived in a single step by directly docking the melodic H tone to the stem initial syllable via Melodic H Docking-II (47). But a H toned verb requires an extra rule to delete the lexical stem H tone "stranded" on the stem-initial syllable. (Revised) Reverse Meeussen's Rule is such a rule.

(48) Reverse Meeussen's Rule (Revised)

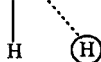


The Reverse Meeussen's Rule is confined to the stem because, as seen from (38) above, melodic H tone never triggers deletion of a H linked to a prefix.

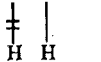
(49) Derivations

a. H Toned Verb

i. a a β u k u u l e



ii. a a β u k u u l e



iii. a a β u k u u l e

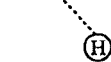
MHD-II

RMR

SURFACE

b. Toneless Verb

a a k a l a a m e



a a k á l a a m e

As the derivations in (49) illustrate, the Class Two pattern utilizes at most two rules to create the isolation tone pattern of a verb that has no object prefix. These are Melodic H Docking - II (47) and Reverse Meeussen's Rule (48).

The fact that the object prefix serves as a H tone anchor in the Class Two tenses has two interpretations: first, it suggests that the object prefix is not a part of the stem proper, or its H tone would be deleted by Reverse Meeussen's Rule in accordance with the one-H-per-stem restriction. Second, one could assume that the object prefix combines with the stem to create a domain that is intermediate in size between the stem proper and the larger domains created by adding the subject and tense prefixes.

A H toned verb that has an object prefix has at least three underlying H tones. These include the lexical H tone that comes with the root, the melodic H, and the H that comes with the object prefix. A toneless verb bearing an object prefix, on the other hand, has two underlying H tones: the H tone contributed by the object prefix and the melodic H. Given these facts, consider the following examples:

(50) **Toneless Verbs**

a. Disyllabic Verbs

aalímiile	's/he cultivated'
aamúlimiile	's/he cultivated for her'
aatúumiile	's/he skipped'
aamútuumiile	's/he skipped for him'

b. Polysyllabic Verbs

aakálaame	's/he looked up'
aamúkalaame	's/he looked up at him'
aalóleeleele	's/he stared'
aamúloleeleele	's/he stared at him'

(51) **H Toned Verbs**

a. Disyllabic Verbs

aañoóne	's/he saw'
aamúñoóne	's/he saw him'
aateexíle	's/he cooked'
aamúteexíle	's/he cooked him'

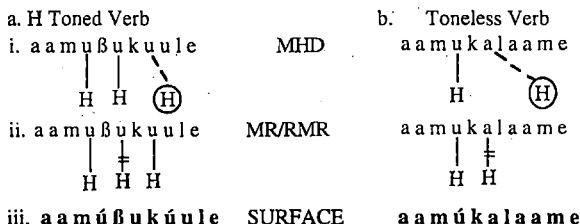
b. Polysyllabic Verbs

aaßukúule	's/he took'
aamúßukúule	's/he took him'
aaxalákiile	's/he cut for/sentenced'
aamúxalákiile	'she cut for (or sentenced) him'

A toneless verb that has no object prefix exhibits the melodic H on the stem-initial syllable (50). When an object prefix is added, the verb still has a single H tone, but now the H anchors on the object prefix whereas the stem-initial syllable is toneless. This must be the H that comes with the object prefix, given that generally H tones do not dock or spread to syllables already having a H tone. It also means that the melodic H has deleted after the object prefix H tone in a deletion that requires syllable adjacency between the triggering H tone and the target H tone, as the melodic H does not delete in *aamúteexíle* 's/he cooked him' (51a), *aamúßukúule* 's/he took him' (51b), and so forth.

In a H toned verb that has no object prefix, the melodic H triggers deletion of the lexical stem H tone, but only after the lexical H tone has blocked the melodic H from docking to the stem-initial syllable. This serves as evidence that deletion of the lexical H tone is ordered after Melodic H Docking (47). Once the melodic H has docked it triggers either Reverse Meeussen's Rule or Meeussen's Rule to eliminate the derived H tone adjacency. The derivations in (52) illustrate the interaction of Melodic H Docking, Reverse Meeussen's Rule, and Meeussen's Rule in verbs that have an object prefix.

(52) Derivations



To summarize, by assuming that the melodic H tone docks directly to the left edge of the verb stem, we can derive the appropriate surface tone patterns of both toneless and H toned verbs with two rules: Melodic H Docking and Meeussen's (or Reverse Meeussen's) Rule. Apparently, Meeussen's Rule is specific to the Class Two pattern, only targeting a stem H after an object prefix H, as in *aamúkalaame* 's/he looked up at him.' Melodic H docking precedes Meeussen's and Reverse Meeussen's Rules.

3.2 The Class Two Tenses in Phrases

First, consider the data in (53) - (56):

(53) Toneless Verbs with Toneless Objects

- | | | |
|----------------------------|------------------------|-----------------------|
| a. Monosyllabic Verb | | |
| /a-a-se-il-e βuufu/ | [aasyéele βuufu] | 's/he ground flour' |
| b. Disyllabic Verb | | |
| /a-a-tuum-il-e kumukoye/ | [aatúumile kumukoye] | 's/he skipped a rope' |
| c. Polysyllabic Verb | | |
| /a-a-loleel-il-e čirjeeni/ | [aalóleelele čirjeeni] | 's/he stared at fish' |

(54) Toneless Verbs with H Toned Objects

- | | | |
|---------------------------|------------------------|----------------------------|
| a. Monosyllabic Verbs | | |
| /a-a-se-il-e búulo/ | [aasyéele búulo] | 's/he ground millet' |
| /a-a-ku-il-e kámalalu | [aakwíile kámalalu] | 's/he became mad' |
| b. Disyllabic Verbs | | |
| /a-a-lim-il-e búulime/ | [aalímile búulime] | 's/he cultivated a garden' |
| /a-a-tuum-il-e kámawa/ | [aatúumile kámawa] | 's/he skipped thorns' |
| c. Polysyllabic Verbs | | |
| /a-a-kalam-il-e báaloosi/ | [aakálaame báaloosi] | 's/he looked at old women' |
| /a-a-loleel-il-e báaxasi/ | [aalóleelele báasaani] | 's/he stared at men' |

(55) H Toned Verbs with Toneless Objects

a. Monosyllabic Verbs

/a-a-li-il-e ßuufu/	[aalííle ßuufu]	's/he ate flour'
/a-a-ri-il-e/	[aariíre kumuɲíxa]	's/he feared a fall'

b. Disyllabic Verbs

/a-a-ßon-il-e kumukuunda/	[aaßoóne kumukuunda]	's/he saw a farm'
/a-a-teex-il-en kumukoye/	[aateexíle kumokoye]	's/he cooked a rope'

c. Polysyllabic Verbs

/a-a-ßukul-il-e Baalosi/	[aaßukúúle Baalosi]	's/he took witches'
/a-a-xalak-il-il-e/	[aaxalákiile číjeeni]	's/he sentenced fish'

(56) H Toned Verb with H Toned Objects

a. Monosyllabic Verbs

/a-a-li-il-e ßúulo/	[aalííle ßúulo]	's/he ate millet'
/a-a-ri-il-e kámalalu/	[aariíre kámalalu]	's/he feared madness'

b. Disyllabic Verbs

/a-a-ßon-il-e ßúulime/	[aaßoóne ßúulime]	's/he saw a garden'
/a-a-teex-il-e kamáwa/	[aateexíle kámawa]	's/he cooked thorns'

c. Polysyllabic Verbs

/a-a-ßukul-il-e Báaloosi/	[aaßukúúle Báaloosi]	's/he took witches'
/a-a-xalak-il-il-e číxaafu/	[aaxalákiile číxaafu]	's/he sentenced cows'

In general, verbs selecting a Class Two tense maintain their isolation pattern when placed in phrases, regardless of the tone of the word following the verb. This contrasts with the Class One tenses where a string of H's is replaced by a singly linked H in the same context.

Besides keeping their isolation pattern, the verbs in (53)-(56) show no evidence of a phrasal H tone being inserted. This could mean that (i) the phrasal H triggers deletion of the melodic H then docks to the melodic H anchor, (ii) the phrasal H fails to dock because its target, the stem-initial syllable, is already H toned, or that (iii) phrasal H docks to the final syllable then deletes because of a prohibition against final H tones. Either (ii) or (iii) accounts for this pattern, but the point is that phrasal H fails to surface in the verb.

Also significant in the above data is that in forms like *aaßoóne* 's/he saw', *aalííle* 's/he ate', and so forth the retracted H remains retracted even when the verb is no longer prepausal. This makes final H retraction a word-level process whose effects cannot be reversed during phrase formation.

4 The Class Three Tense

We now turn to what could very well be called the **Subjunctive Pattern**¹² even though it is shared by the *kene*-Immediate Future, which I will not discuss separately since everything said about the subjunctive applies to its pattern as well. The subjunctive exhibits a quite straightforward tone pattern, which involves a single H tone doubly linked to the first two vowels of the verb, the first of which is the subject prefix.

¹² Though cited in isolation here, the subjunctive is always preceded by a finite verb construction such as "tell him + Subjunctive", e.g. *myßooléle ásyé* 'tell him (to) grind,' or *neépa díime* 'I want you (to) cultivate.' Therefore in the gloss, the English equivalent of the subjunctive does not show agreement with the 3 sg. subject.

According to the forms in (57) and (58), the subjunctive neutralizes the high/low tone contrast by assigning all verbs a uniform tone pattern. The simple rule seems to be: delete all underlying H tones, then doubly link the melodic H to the first two moras of the verb.

(57) Toneless Verbs without Object Prefix

a. Monosyllabic Verbs

/a-se-e/	[ásyé]	's/he grind'
/a-ku-e/	[ákwé]	's/he fall'

b. Disyllabic Verbs

/a-lim-e/	[álíme]	's/he cultivate'
/a-tuum-e/	[átúume]	's/he skip'

c. Polysyllabic Verbs

/a-kalam-e/	[ákálame]	's/he look up'
/a-lolelelel-e/	[álóleelele]	's/he stare'

(58) H Toned Verb without Object Prefix

a. Monosyllabic Verbs

/a-li-e/	[ályé]	's/he eat'
/a-ri-e/	[áryé]	's/he fear'

b. Disyllabic Verbs

/a-βon-e/	[áβóne]	's/he see'
/a-teex-e/	[átéexe]	's/he cook'

c. Polysyllabic Verbs

/a-βukul-e/	[áβúkule]	's/he take'
/a-xalakil-e/	[áxálakile]	's/he sentence'

The pattern does not change with the addition of the object prefix, as in (59) and (60):

(59) Toneless Verbs with Object Prefix

a. Monosyllabic Verb

/a-xu-se-e/	[áxúsyé]	's/he grind us'
-------------	----------	-----------------

b. Disyllabic Verb

/a-ku-tuum-e/	[ákútuume]	's/he skip it'
---------------	------------	----------------

c. Polysyllabic Verb

/a-βa-kalam-e/	[áβákalame]	's/he look up at them'
----------------	-------------	------------------------

(60) H Toned Verbs with Object Prefix

a. Monosyllabic Verb

/a-mu-ri-e/	[ámúryé]	's/he fear him'
-------------	----------	-----------------

b. Disyllabic Verb

/a-ku-teex-e/	[ákúteexe]	's/he cook it'
---------------	------------	----------------

c. Polysyllabic Verb

/a-mu-lolelelel-e/	[ámúloleelele]	's/he stare at him'
--------------------	----------------	---------------------

Note that the melodic H tone docks to the two leftmost syllables of the verb, indicating that the object prefix falls within the domain of the rule assigning the subjunctive pattern.

Further evidence shows that the rule counts moras rather than syllables, because the two moras targeted by subjunctive H docking can be tauto-syllabic (cf. (61)). (The subject prefix vowel lengthens compensatorily before a nasal-consonant cluster created by placing the 1 sg object prefix [-n-] before the stem-initial consonant).

(61) The Subjunctive with 1 sg. Object Prefix

a. H Toned Verb

- | | | |
|------------------|-------------|----------------|
| i. /a-n-Bukul-e/ | [áámbukule] | 's/he take me' |
| ii. /a-n-teex-e/ | [áándeexe] | 's/he cook me' |

b. Toneless Verb

- | | | |
|------------------|-------------|----------------------|
| i. /a-n-kalam-e/ | [áángalame] | 's/he look up at me' |
| ii. /a-n-tuum-e/ | [áánduume] | 's/he skip me' |

Informally stated, the rule deriving the subjunctive pattern reads as in (62):

(62) Subjunctive H Docking

Place the melodic H tone on the first two moras of the verb.

Because tones do not simultaneously dock to two moras in autosegmental phonology, we assume that the H first docks to the initial vowel, then doubles onto the following vowel to derive the double linkage. Apparently, the Subjunctive H Docking operates over a larger domain than Melodic H Docking (cf. §2 & §3). To illustrate the differences, consider the effect that the 1 sg subject prefix has on the Class One, Two, and Three patterns. (I use the Immediate Future (63a) to represent Class One, the Intermediate Past (63b) to represent Class Two, and the Subjunctive (63c) to represent Class Three.)

(63) Toneless Verbs

a. The Immediate Future

- | | | |
|----------------|-------------|------------------|
| /n-la-lim-a/ | [ndalima] | 'I'll cultivate' |
| /n-la-tuum-a/ | [ndatuuma] | 'I'll skip' |
| /n-la-kalam-a/ | [ndakalama] | 'I'll look up' |

b. The Intermediate Past

- | | | |
|-------------------|--------------|----------------|
| /n-aa-lim-il-e/ | [naalímile] | 'I cultivated' |
| /n-aa-tuum-il-e/ | [naatúumile] | 'I skipped' |
| /n-aa-kalam-il-e/ | [naakálaame] | 'I looked up' |

c. The Subjunctive

- | | | |
|-------------|------------|---------------|
| /n-lim-e/ | [n(d)íme] | 'I cultivate' |
| /n-tuum-e/ | [ndúume] | 'I skip' |
| /n-kalam-e/ | [ngáálame] | 'I look up' |

The Subjunctive pattern (63c) clearly has little in common with the Class One pattern (63a). However, it does share with Class Two (63b) the stem-initial H, a similarity that extends to forms that have an object prefix, as illustrated by the forms in (64). This similarity in the behavior of verbs selecting the Subjunctive and a Class Two tense raises the question whether the only thing differentiating the subjunctive and Class Two patterns is the docking of H on the subject prefix in the Subjunctive but not in Class Two.

(64) Toneless Verbs

a. The Intermediate Past

/n-aa-ku-tuum-il-e/	[naakútuumile]	'I skipped it'
/n-aa-ku-kalam-il-e/	[naakúkalaame]	'I looked up at it'

b. The Subjunctive

/n-ku-tuum-e/	[ngútuume]	'I skip it'
/n-ku-kalam-e/	[ngúkalamé]	'I look up at it'

The answer lies in comparing the patterns of H toned verbs bearing either tense, which show clear differences between the two classes. Consider the forms in (65):

(65) H Toned Verbs

a. Intermediate Past

/n-aa-Bon-il-e/	[naaβóóne]	'I saw'	naaβóónele	'I saw for'
/n-aa-teex-il-e/	[naateexile]	'I cooked'	naateexéele	'I cooked for'
/n-aa-Bukul-il-e/	[naaβukúule]	'I took'	naaβukúliile	'I took for'

b. The Subjunctive

/n-Bon-e/	[mbóne]	'I see'	mbónele	'I see for'
/n-teex-e/	[ndéexe]	'I cook'	ndéexele	'I cook for'
/n-Bukul-e/	[mbúkule]	'I take'	mbúkulele	'I take for'

The tonal differences in (65a) and (65b) should not occur if the Class Two pattern and the Subjunctive pattern are generated by the same principles. Notice specifically that suffixation causes pattern variation in Class Two whereas the Subjunctive pattern is invariable.

Another difference between Class Two and the Subjunctive emerges when an object prefix is added to a H toned verb that has the 1 sg subject prefix (66). Crucially, the Class Two pattern has two H tones: one on the object prefix and the other in the stem (66a), whereas the Subjunctive has only the object prefix H but no stem H (66b). Once again, suffixation has no effect on the Subjunctive pattern, which clearly shows that the shared properties between the Subjunctive and Class Two are a chance occurrence.

(66) H Toned Verbs

a. Intermediate Past

/n-aa-ku-Bon-il-e/	[naakúβóóne]	'I saw it'
/n-aa-ku-teex-il-e/	[naakúteexile]	'I cooked it'
/n-aa-ku-Bukul-il-e/	[naakúβukúule]	'I took it'

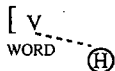
b. The Subjunctive

/n-ku-Bon-e/	[ngúβone]	'I see it'
/n-ku-teex-e/	[ngúteexe]	'I cook it'
/n-ku-Bukul-e/	[ngúβukule]	'I take it'

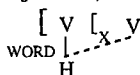
To recapitulate, the Subjunctive pattern results from the melodic H tone directly targeting the left edge of the verb, generally the subject prefix. Except for the cases involving the 1 sg. subject prefix, the H doubly links to the first two moras of the verb. As evidence from forms bearing the 1 sg. object prefix has demonstrated, the targeted moras could be tauto-syllabic. Forms with the 1 sg. subject prefix, on the other hand, add an interesting dimension to the behavior of the Subjunctive, because they suggest that the H tone actually surfaces on two separate domains; that is, after targeting the left edge of the verb, the H tone doubles onto the initial vowel of the next domain, which is either the

structure created when an object prefix is added to a stem, or just the bare stem. If this is true, the Subjective pattern can be derived by successively applying the rules in (67) and (68), once all underlying H's have been eliminated:

(67) **Melodic H Docking - III**



(68) **(Subjective) H Doubling¹³**



Thus, in forms with the 1 sg. subject prefix, the melodic H targets the left edge of the verb, but because the subject prefix only consists of a nasal which is not a possible surface anchor, it doubles onto the next domain yielding a singly linked H in *ngálame* 'I look up' and *mbúkule* 'I take.' In forms that have both the 1 sg. subject prefix and an object prefix, the H singly links to the initial syllable of domain "G" (see discussion of Final H Deletion in §2.1) to create forms like *ngúkalame* 'I look up at it' and *ngúβukule* 'I take it.' The H cannot double onto the stem-initial syllable because if it did, it would be crossing two domain boundaries: i.e., that between the subject prefix and the G-Domain, and the one between the object prefix and the stem. The reason why we do not get double linking here is because the nasal prefix -a consonant- is not an eligible surface H tone anchor.

In phrases, verbs selecting the subjunctive tense keep their isolation tone pattern regardless of the tone of the next word (69a,b):

(69) **The Subjunctive in Phrases**

a. Toneless Verb

/a-kalam-e Baalosí/	[ákálame Baalosí]	's/he look up at witches'
/a-kalam-e Báaloosi/	[ákálame Báaloosi]	's/he look up at old women'

b. H Toned Verb

/a-Bukul-e Baalosí/	[ábúkule Baalosí]	's/he take witches'
/a-Bukul-e Báaloosi/	[ábúkule Báaloosi]	's/he take old women'

5 Residual Cases

The tenses we consider in this section do not constitute a set. Instead, each tense exhibits a feature (or set of features) which makes it unique. These tenses may share some properties with the Class One, Two, and Three tenses but differ from them by a feature or two. We begin by looking at the Remote Perfective.

5.1 The Remote Perfective

At first glance, the Remote Perfective pattern appears to combine the properties of Class One and Class Two tenses. However, a closer look reveals that it differs from them in a number of aspects. First, a H tone docks to the subject prefix in the Remote Perfective, which is not possible in the Class One and Two patterns. Second, the Remote Perfective has a H on the object prefix (cf. *ámúβoná* 's/he already saw him'), which is possible in

¹³ X is a variable for the domain that the H tone doubles onto.

the Class Two pattern (cf. *alimúβona* 's/he'll see him') but not in Class One (cf. *álámúβoná* 's/he'll see him'), although it might be argued that its failure to appear in the Class One pattern is an effect of Meeussen's Rule within the prefix domain. Third, in the Remote Perfective, Meeussen's Rule fails to delete the melodic H after the object prefix H. As a result we find forms like *áamúkálámá* 's/he already looked up at him,' where the string of H's extending from the object prefix must have come from combining two separate H tones. In Class Two, the melodic H deletes after the object prefix H. Therefore strings involving the object prefix H and the melodic H are not possible.

Consider the data in (70):

(70) **The Remote Perfective**

a. **Toneless Verbs**

/a-a-se-a/	[áasyá]	's/he already ground'
/a-a-βu-se-a/	[áaβúsyá]	's/he already ground it'
/a-a-lim-a/	[áalímá]	's/he already cultivated'
/a-a-ku-lim-a/	[áakúlmá]	's/he already cultivated it'
/a-a-kalam-a/	[áakálámá]	's/he already did look up'
/a-a-mu-kalam-a/	[áamúkálámá]	's/he already did look up at him'

b. **H Toned Verbs**

/a-a-li-a/	[áalyá]	's/he already ate'
/a-a-mu-li-a/	[áamúlyá]	's/he already ate him'
/a-a-βon-a/	[áaβoná]	's/he already saw'
/a-a-mu-βon-a/	[áamúβoná]	's/he already saw him'
/a-a-βukul-a/	[áaβukúlá]	's/he already did take'
/a-a-mu-βukul-a/	[áamúβukúlá]	's/he already did take him/her'

5.1.1 **Deriving the Remote Perfective Pattern**

Apparently, the tense prefix -A- is H toned. This H "spreads" onto the subject prefix, and then delinks from its sponsor by Right Sister Delinking (12).

(71) **Derivations**

a. **H Toned Verb**

i. a - a - β o n - a	MHD
H H (H)	
ii. a - a - β o n - a	LS
H H H	
iii. a - a - β o n - a	RSD
H H H	
iv. a - a - β o n - a	RMR
H H H	
v. á a β o n á 's/he saw'	SURFACE

b. **Toneless Verb**

a - a - l i m - a	
H (H)	
a - a - l i m - a	
H H	
a - a - l i m - a	
H H	
a - a - l i m - a	
H H	
á a l í m á 's/he cultivated'	

Because the tense prefix is H toned, the H tone on the object prefix H cannot spread leftwards. As a result, the lexical H is forced to remain on the stem-initial syllable to remain on its sponsor. Subsequently, either the melodic H tone spreads leftwards from the

final syllable then triggers Reverse Meeussen's Rule (47), or Meeussen's Rule (39) is activated by the sequence of adjacent H tones causing stem-initial H deletion. The point is that a H tone deletes.

5.1.2 The Remote Perfective in Phrases

In phrases, the melodic H tone, which appears as a string of H's at the right edge of the verb in isolation, delinks from all but its leftmost anchor, which creates a H that singly links to stem syllable one or two depending on the underlying tone of the verb. Consider the forms in (72) - (75):

(72) Toneless Verb, Toneless Object

/a-a-kalam-a/	[áakálámá]	's/he already looked up'
/a-a-kalam-a Baalosí/	[áakálama Baalosí]	's/he already looked up at witches'

(73) Toneless Verb, H Toned Object

/a-a-kalam-a Báaxasí/	[áakálama Báaxasí]	's/he already looked up at women'
-----------------------	--------------------	-----------------------------------

(74) H Toned Verb, Toneless Object

/a-a-Bukul-a/	[áaBukúlá]	's/he already took'
/a-a-Bukul-a Baalosí/	[áaBukúla Baalosí]	's/he already took witches'

(75) H Toned Verb, H Toned Object

/a-a-Bukul-a Báaxasí/	[áaBukúla Báaxasí]	's/he already took women'
-----------------------	--------------------	---------------------------

Now consider what happens in verbs that are derived from shorter stems:

(76) Toneless Verb, Toneless Object

a. /a-a-lim-a/	[áalímá]	's/he already cultivated'
/a-a-lim-a liiloBa/	[áalíma liiloBa]	's/he already dug up soil'
b. /a-a-tuum-a/	[áatúúmá]	's/he already skipped'
/a-a-tuum-a liiloBa/	[áatúuma liiloBa]	's/he already skipped soil'

(77) Toneless Verb, H Toned Object

a. /a-a-lim-a Búulime/	[áalíma Búulime]	's/he already cultivated the garden'
b. /a-a-tuum-a Búulime/	[áatúuma Búulime]	's/he already skipped the garden'

(78) H Toned Verb, Toneless Object

a. /a-a-Bon-a/	[áaBoná]	's/he already saw'
/a-a-Bon-a Baalosí/	[áaBona Baalosí]	's/he already saw witches'
b. /a-a-teex-a/	[áateexá]	's/he already cooked'
/a-a-teex-a liiloBa/	[áateexa liiloBa/]	's/he already cooked soil'

(79) H Toned Verb, H Toned Object

a. /a-a-Bon-a Báaxasí/	[áaBoná Báaxasí]	's/he already saw women'
b. /a-a-teex-a Báaxasí/	[áateexá Báaxasí]	's/he already cooked women'

A toneless disyllabic verb exhibits two H tones before another word. One H tone docks to the subject prefix and the other to the stem-initial syllable, whether the complement is H toned or toneless (cf. (76; 77)). In contrast, a corresponding H toned verb alternates between having a final H before a H toned complement (79) and no H on the final

syllable before a toneless complement (78). The verb final H deletes in *datexa lilofa* 's/he already cooked soil' because retraction does not operate in this tense.

If the subject prefix did not have a H tone, the Remote Perfective would be a Class One tense because the melodic H, which surfaces as a string in isolation, appears as a singly linked H that deletes in case it is verb final and the complement is toneless. But the Remote Perfective also shares with Class Two tenses the H tone on the object prefix, which is not a property of the Class One pattern.

In the forms in (80) - (81), we see the effect of placing a complement after a verb that is in the Remote Perfective and has an object prefix. Basically, a toneless verb shows two H's when an object prefix is added (80; 81). The first H docks to the subject prefix while the second forms a string that stretches from the object prefix to the end of the verb. One might posit the object prefix as being toneless in this tense, which would mean that after docking to the final syllable, the melodic H spreads leftwards until it hits the object prefix. This creates a form like *damúkálámá* 's/he already looked up at him.' In a phrase, the H string delinks all but its leftmost association line to yield a singly linked melodic H, as in *damúkalama lulala* 's/he already looked up at him once.' The problem is that this solution makes the Remote Perfective the only tense where object prefixes are toneless.

(80) Toneless Verb, Toneless Complement

- | | |
|------------------------------------|-------------------------------------------------------------------------|
| a. áálíímá
áálíima lulala | 's/he already cultivated it (cl.5)
's/he already cultivated it once' |
| b. áákútúúmá
áákútuuma lulala | 's/he already skipped it (cl.3)
's/he already skipped it once' |
| c. áákúkálámá
áákúkalama lulala | 's/he already looked up at it
's/he already looked up at it once' |

(81) Toneless Verb, H Toned Complement

- | | |
|-----------------------|--------------------------------------|
| a. ááβúlima lúukali | 's/he already cultivated it a lot' |
| b. áákútuuma lúukali | 's/he already skipped it a lot' |
| c. áákúkalama lúukali | 's/he already looked up at it a lot' |

(82) H Toned Verb, Toneless Object

- | | |
|------------------------------------|------------------------------------------------------------------|
| a. áákúβoná
áákúβona lulala | 's/he already saw it (cl.3)
's/he already saw it once' |
| b. ááβúteexá
ááβúteexa lulala | 's/he already cooked it (cl.14)
's/he already cooked it once' |
| c. ááβáβukúlá
ááβáβukúla lulala | 's/he already took them (cl.2)
's/he already took them once' |

(83) H Toned Verb, H Toned Object

- | | |
|-----------------------|----------------------------------|
| a. ááβáβoná lúukali | 's/he already saw them a lot' |
| b. ááβáteexá lúukali | 's/he already cooked them a lot' |
| c. ááβáβukúlá lúukali | 's/he already took them a lot' |

The alternative is to consider the object prefix H toned, as in all the other tenses, then either assume that nothing happens after the leftward spreading of the melodic H, or posit H fusion that involves the object prefix H and the melodic H. If we take the nothing-happens approach, we have to assume further that in phrases the melodic H deletes before any word. But if we adopt the H fusion approach, the singly linked H that occurs in phrases can be obtained by applying Right Sister Delinking.

The forms involving H toned verbs (82; 83) reveal two things: (i) that the melodic H triggers deletion of the stem H in the Remote Perfective as well, and (ii) that a melodic H falling on the final syllable of a disyllabic verb gets deleted before a toneless complement (82a,b) but is preserved before a H toned complement (83a,b).

In summary, although the Remote Perfective shares some features with Class One and Two patterns, it differs from them because both the subject and object prefixes bear a H tone, and the melodic H fails to delete after an object prefix H. These features justify its being treated separately.

5.2 The Immediate (today) Past

Another tense that cannot be categorized in terms of the Class One, Two, and Three patterns is the Immediate (today) Past, which the following examples represent:

(84) The Immediate (Today) Past

a. H Toned Verb

/a-ʒukul-il-e/	[aʒukuule]	's/he took'
/a-mu-ʒukul-il-e/	[amúʒukuule]	's/he took 3sg.'

b. Toneless Verb

/a-kalam-il-e/	[akálaame]	's/he looked up'
/a-mu-kalam-il-e/	[amúkalaame]	's/he looked up at 3sg.'

In this tense, a H toned verb that has no object prefix surfaces without a H tone (84a), whereas a corresponding toneless verb has the melodic H on the stem-initial syllable (84b). The pattern of the H toned verb is surprising, given that such a verb has at least two underlying H tones. The H tone appearing in toneless verbs independently shows that this tense also assigns a melodic H to a verb, which then raises a number of questions if we assume that the melodic H tone causes deletion of the lexical stem H tone in H toned verbs. First, does the melodic H first dock to a syllable before triggering this deletion? If so, what syllable does it dock to? And why does it not surface on that syllable after causing the lexical stem H tone to delete?

In classical autosegmental phonology, a tone cannot trigger deletion of another tone while still in "floating" status, as the trigger and target would not be adjacent. Therefore the melodic H must dock somewhere in the verb before triggering deletion of the lexical stem H tone. I assume that in this tense the melodic H tone first docks to the final syllable, and then looks for the left edge of the stem, because the tense absolutely requires that the melodic H surface on the stem-initial syllable. I assume further that this tense allows only one surface H tone in the stem. When the melodic H docks to the final syllable in a H toned verb, the derived structure violates this restriction because it now has two H tones in the stem. To correct the violation, the lexical stem H tone deletes, while the melodic H stays on the final syllable because the stem-initial syllable is already a lexical H tone sponsor. Subsequently, the melodic H undergoes Final H Deletion (15). Verbs with H toned complements probably provide the only evidence that the melodic H docks to the verb's final syllable (e.g. *aʒukuulé ʒáʒaana* 's/he took children,' *ateexilé kámátóore* 's/he cooked plantains' (cf. *ateexile* 's/he cooked'), etc.), although the H in question could also be the phrasal H.

A H toned verb that has an object prefix has two lexical H tones underlyingly plus the melodic H tone. However, only the H on the object prefix surfaces (cf. *amúʒukuule* 's/he took him.' In such a verb, the melodic H triggers deletion of the lexical stem H tone, but it cannot delete the H on the object prefix because the object prefix is in a domain that is

larger than the stem, and so its H tone is not subject to the one-H-per-stem restriction. Final H Deletion eliminates any melodic H that gets "stranded" on the final syllable.

In a toneless verb, the melodic H finds the stem-initial syllable easily enough, and creates forms like *akálaame* 's/he looked up,' and *alimile* 's/he cultivated'. When an object prefix is added, the melodic H still docks to the stem-initial syllable, but deletes by Meeussen's Rule (39) triggered by the object prefix H. The resultant form has H on the object prefix, as in *amúkalaame* 's/he looked up at him' and *akúlimile* 's/he cultivated it.'

In summary, in order to explain the surface tonelessness of an underlyingly H toned verb, we have assumed that the Immediate Past tense requires that the melodic H surface on the stem-initial syllable or it does not surface at all. In a way, this requirement captures the general tendency for H tones to look for an anchor to the left of some domain, so it is not entirely unusual. The tense also bans more than one H per stem, and a H that falls on the final syllable gets deleted. These properties have already been noted with respect to Classes One and Two. This tense does not have the option of H docking on stem syllable two in the event that the initial syllable is unavailable.

5.3 The Remote Past Tense

The third and final tense considered residual is the Remote Past, examples of which are presented in (85) and (86). Note that the initial syllable is optionally long.

(85) Toneless Verbs

a. Monosyllabic Verbs

/a-a-se-a/	[á(a)sya]	's/he ground'
/a-a-ku-a/	[á(a)kwa]	's/he fell'

b. Disyllabic Verbs

/a-a-lim-a/	[á(a)lima]	's/he cultivated'
/a-a-tuum-a/	[á(a)tuuma]	's/he skipped'

c. Polysyllabic Verbs

/a-a-kalam-a/	[á(a)kalama]	's/he looked up'
/a-a-loleelel-a/	[á(a)loleelela]	's/he stared'

(86) H Toned Verbs

a. Monosyllabic Verbs

/a-a-li-a/	[á(a)lya]	's/he ate'
/a-a-ri-a/	[á(a)rya]	's/he feared'

b. Disyllabic Verbs

/a-a-βon-a/	[á(a)βona]	's/he saw'
/a-a-teex-a/	[á(a)teexa]	's/he cooked'

c. Polysyllabic Verbs

/a-a-βukul-a/	[á(a)βukula]	's/he took'
/a-a-xalakil-a/	[á(a)xalakila]	's/he sentenced'

In isolation, verbs marked for the Remote Past exhibit a single H tone that docks onto the word-initial vowel, which is the subject prefix in the forms in (85) and (86). Neither toneless nor H toned verbs bear a H tone in the stem, giving the impression that all lexical stem H tones delete before the melodic H docks to the word-initial syllable, as in the case of the subjunctive (see §4).

However, more data (cf. (87; 88)) indicates that the pattern observed in the toneless verbs in (85) must have come from successively applying Melodic H Docking, then Meeussen's Rule triggered by the H on the past tense -A- to delete the object prefix H. Thus, in a monosyllabic verb, the melodic H docks to the stem-initial syllable but deletes because the preceding object prefix has a H tone. The optional mora in the initial syllable must be "transparent" because Meeussen's Rule normally does not apply between H tones that are not mora-adjacent (see forms like *áamúßukúla* 's/he already took him' from the Remote Perfective where the object prefix H is syllable adjacent to the H on the initial syllable yet it still surfaces).

(87) Toneless Verbs

a. Monosyllabic Verbs

/a-a-mu-se-a/	[á(a)musya]	's/he ground him'
/a-a-ku-ku-a/	[á(a)kukwa]	's/he fell it (cl.3)'

b. Disyllabic Verbs

/a-a-ßu-liim-a/	[á(a)ßulíma]	's/he cultivated it (cl.14)'
/a-a-ßu-tuum-a/	[á(a)ßutúuma]	's/he skipped it'

c. Polysyllabic Verbs

/a-a-mu-kalam-a/	[á(a)mukálama]	's/he looked up at him'
/a-a-mu-loleelelel-a/	[á(a)mulóleelela]	's/he stared at him'

(88) H Toned Verbs

a. Monosyllabic Verbs

/a-a-mu-li-a/	[á(a)mulya]	's/he ate him'
/a-a-ku-ri-a/	[á(a)kurya]	's/he feared it'

b. Disyllabic Verbs

/a-a-ßu-Bon-a/	[á(a)ßußona]	's/he saw it (cl.14)'
/a-a-ßu-teex-a/	[á(a)Buteexa]	's/he cooked it'

c. Polysyllabic Verbs

/a-a-mu-Bukul-a/	[á(a)mußukula]	's/he took him'
/a-a-mu-xalakil-a/	[á(a)muxalakila]	's/he sentenced him'

To explain the pattern in (87), let us assume that after forcing the melodic H to be stranded on the final syllable (87a), the object prefix H deletes by Meeussen's Rule caused by the H on the subject prefix.¹⁴ In longer stems (87b,c), the melodic H docks on a non-final syllable. Because Meeussen's Rule is a left-to-right rule, it first applies between the subject prefix H and the object prefix H. The output structure has a H tone on the subject prefix and another on the stem-initial syllable. The pattern in (88) remains a mystery that I will leave for further investigation.

The isolation pattern of a verb that is marked for the Remote Past is preserved at phrase level, as seen from the forms in (89) - (92). Note that the verb's tone pattern is unaffected by the tone of the following word. Among other things, these forms show verbs selecting the Remote Past as being generally unreceptive to "foreign" tones, including the phrasal H tone. While it appears that all H tones delete from the stem, it is hard to think of a derivational procedure that would produce this pattern, a pattern that we leave as a puzzle that our derivational account has no immediate answer for.

¹⁴ This evidence forces a revision of the structural description of Meeussen's Rule by removing the "STEM" specification, as what is important is the fact that the triggering H tone links to a vowel in the prefix domain.

(89) Toneless Verbs with Toneless Modifier**a. Monosyllabic Verbs**

/a-a-se-a Buufu/	[á(a)sya Buufu]	's/he ground flour'
/a-a-ku-a kumupixa/	[á(a)kwa kumupixa]	's/he fell a fall'

b. Disyllabic Verbs

/a-a-lim-a kumukuunda/	[á(a)lima kumukuunda]	's/he dug in the farm'
/a-a-tuum-a kumukoye/	[á(a)tuuma kumukoye]	's/he skipped a rope'

c. Polysyllabic Verbs

/a-a-kalam-a mwiikulu/	[á(a)kalama mwiikulu]	's/he looked into the sky'
/a-a-lolelelel-a Baalosi/	[á(a)lolelelela Baalosi]	's/he stared at witches'

(90) Toneless Verbs with H toned Modifier**a. Monosyllabic Verbs**

/a-a-se-a Búulo/	[á(a)sya Búulo]	's/he ground millet'
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b. Disyllabic Verbs

/a-a-lim-a Búulime/	[á(a)lima Búulime]	's/he dug in the garden'
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c. Polysyllabic Verbs

/a-a-kalam-a múungaaki/	[á(a)kalama múungaaki]	's/he looked up'
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(91) H Toned Verbs with Toneless Modifier**a. Monosyllabic Verbs**

/a-a-li-a Buufu/	[á(a)lya Buufu]	's/he ate flour'
/a-a-ri-a kumupixa/	[á(a)rya kumupixa]	's/he feared a fall'

b. Disyllabic Verbs

/a-a-Bon-a kumukuunda/	[á(a)Bona kumukuunda]	's/he saw a farm'
/a-a-teex-a kumukoye/	[á(a)teexa kumukoye]	's/he cooked a rope'

c. Polysyllabic Verbs

/a-a-Bukul-a Baalosi/	[á(a)Bukula Baalosi]	's/he took witches'
/a-a-xalakil-a čĩĩreeni/	[á(a)xalakila čĩĩreeni]	's/he sentenced fish'

(92) H Toned Verbs with H Toned Modifier**a. Monosyllabic Verbs**

/a-a-li-a Bóolu/	[á(a)lya Búulo]	's/he are millet'
/a-a-ri-a kámawa/	[á(a)rya kámawa]	's/he feared thorns'

b. Disyllabic Verbs

/a-a-Bon-a Búulime/	[á(a)Bona Búulime]	's/he saw a garden'
/a-a-teex-a kámawa/	[á(a)teexa kámawa]	's/he cooked thorns'

c. Polysyllabic Verbs

/a-a-Bukul-a Báaloosi/	[á(a)Bukula Báaloosi]	's/he took old women'
/a-a-xalakil-a čĩĩxele/	[á(a)xalakila čĩĩxele]	's/he sentenced frogs'

6 Summary and Conclusion

he rich system of tenses that I have described here provides a challenging yet interesting testing ground for any theory of tones. An obvious fact is that in trying to explain the various tonal phenomena we have witnessed, one must recognize the crucial role that

tense plays in determining the surface tone of a verb. Three main classes of tenses have been identified on the basis of certain shared properties both in isolation and within phrases. Apart from these classes, we have also examined three tenses whose unique features demand that they be treated separately. We conclude from this that though a unified account of the tone system of Bukusu verbs would be desirable, it would be hard to accomplish without paying attention to the idiosyncracies of certain tenses.

We have invoked various features to determine tense affiliation in the proposed classes. For instance, a Class One tense is identified by the following features: (i) a toneless verb remains toneless in isolation, whereas its H toned counterpart has one H in the prefix and another in the stem, (ii) both the lexical and melodic stem H tones "spread" leftwards from their underlying positions, (iii) in isolation, the melodic H surfaces as a string of H's at the right edge, and (iv) the subject prefix is not an eligible H tone anchor. The features that define the Class Two pattern are: (i) both toneless and H toned verbs must have a H tone in their surface structure, (ii) melodic H docks to the leftmost stem syllable, unless it is already H toned, (iii) both the subject and tense prefixes are excluded from possible melodic H anchors, and (iv) a prepausal H either retracts or deletes depending on the length of the penultimate syllable. Two primary features define the subjunctive pattern: (i) all verbs are assigned a surface H tone regardless of their underlying tone, and (ii) the melodic H is placed on the verb's initial syllable. Lastly, the "residual" tenses combine one or two other features with some of the characteristics of Classes One, Two, and Three.

Besides tense, the other factors that affect a verb's tone in most of these tenses are (i) stem length, (ii) the verb's underlying tone, (iii) the presence or absence of an object prefix, and (iv) whether the verb is in isolation or in the middle of a phrase.

The rules we have proposed to account for the tonal phenomena described in this study include: (1) Melodic H Docking (different versions), (2) Leftward Spreading, (3) (Reverse) Meeussen's Rule, (4) Right Sister Delinking, (5) Final H Deletion, and (6) Final H Retraction. A rule like Melodic H Docking operates across different tone classes, whereas other rules affect a specific tense or set of tenses. An adequate theory is one that explains the general and the specific without employing *ad hoc* stipulations that do not fall out of the theory in a principled way. One undesirable tactic used extensively here is the use of conditions, restrictions, and prohibitions to block the creation of impossible forms that our rules are not intrinsically equipped to avoid. An adequate theory should not allow loopholes of this nature.

The (recurrent) tendency for H tones to target certain syllables and "edges" within very specific domains is reported in other languages (e.g. Hubbard 1992 on Runyambo, Hyman and Byarushengo 1984 on Haya, Poletto 1995a on OluSamia, and Poletto 1995b and this volume on Runyankore). The fact that not all tenses select the same targets, or confine operations to the same domains, is an interesting challenge must be explained. Therefore, it is pertinent to ask whether a constraint-based approach, some version of Optimality Theory (e.g. Prince and Smolensky 1993, McCarthy and Prince 1993, Cole and Kisseberth 1994a,b,c, etc.), would fare better than our derivational account. The goal of such a theory would be to use uniform principles to explain tone similarities and differences between the different tenses.

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